

REMARKS

I. INTRODUCTION

Claims 1-5 are pending in the current application. Claims 1-5 have been amended. Applicants respectfully request reconsideration of the above identified application in view of the remarks that follow.

II. CLAIM REJECTIONS - 35 U.S.C. § 112, First Paragraph

Claims 1-4 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In this regard, the Examiner states that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(A) With regard to claim 1, last two lines, and claim 4, last three lines, the Examiner states there is no support for excluding the preheating step. (Office Action, p. 3). Applicant respectfully disagrees. Referring to the published application, paragraph 4 notes that, "[t]he disadvantage of the closest analog is impossibility of aluminum melt applying on cast iron and steel products at the temperature lower than 715°C without using fluxes and the presence of intermetallic compounds of quite a big thickness (10-15 micrometers) making the coating brittle, which doesn't allow to deform the steel product with aluminum coating hereinafter." The Summary of the Invention then notes that the present invention, "solves the problem of decreasing the temperature of aluminum melt,..."

Thus, the disclosure specifically states that it solves the problem in the art of applying aluminum melt at high temperatures by decreasing the temperature of the aluminum melt. Such resolution of the problem in the art therefore cannot occur by including a preheating step. Thus, the specification adequately supports this provision in claim 1, and Applicant respectfully requests that this ground of rejection be withdrawn.

(B) The Examiner next states that "introduction of copper to the melt" in claim 2, last line is not supported by the disclosure as originally filed. (Office Action, p. 5).

The inquiry into whether the description requirement of 35 U.S.C. § 112, first paragraph is met as a question of fact. *In re Wertheim*, 541, F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). Whether the description is adequate to support a later claimed invention depends on whether the disclosure of the application originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter. Lack of literal support, in and of itself, is not sufficient to establish lack of adequate descriptive support. *In re Kaslow*, 707 F.2d 1366, 1373, 217 USPQ 1089, 1096 (Fed. Cir. 1983). The description requirement of the first paragraph of 35 U.S.C. § 112 may be satisfied if there is support in the original disclosure for the concept of what is later claimed. *In re Anderson*, 471 F.2d 1237, 1244, 176 USPQ 331, 336 (CCPA 1973).

In this case, the concept that Applicants' process does not involve introduction of copper into the melt is reasonably conveyed from the specification as originally filed. In this regard, Applicant specifically describes in the Summary of the Invention that its method of applying aluminum coatings on cast iron and steel products comprises, "plunging the product into the aluminum melt alloyed with zinc and silicon the solution of said problem is reached by jet-abrasive preparing of the product and the aluminum melt is alloyed with zinc, silicon, magnesium, tin..." (Para. 6). Further, all of the preferred embodiments of Applicants' described invention disclose only the use of these elements. Nowhere does the disclosure suggest or describe the use of other elements besides zinc, silicon, magnesium, and tin as alloys. Certainly, the disclosure does not suggest to persons skilled in the art that copper is a suitable alloy for use in the invention.

For these reasons, the original disclosure supports the added claim language which states that the process does not involve introduction of copper into the melt. Accordingly, Applicant respectfully requests that this ground of rejection be withdrawn.

(C) Next, the Examiner states there is no support for the language in claim 3, line 9 which provides that said plunging in aluminum melts is "for a period of less than 5 minutes." (Office Action, p. 7). Applicants have now amended claim 3 to describe that said plunging occurs for a time period of 2 minutes or less. This time period is literally supported by Tables 1 and 2 which describe time periods from 2 minutes (120 seconds) and less.

Claims 1-5 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In this regard, the Examiner states that there is insufficient description "of how the 'Mandrel test' works such that this test can be reproduced, understood or compared, and thus one of ordinary skill in the art would not be able to make and/or use the invention."¹ While Applicants respectfully disagree, in the interest of expediting prosecution, claims 1-5 have been amended to specifically note that the Mandrel test employed uses a mandrel having a minimum diameter of 10 mm, as set forth on page 3 of the specification. No new matter has been added. It is therefore believed this objection has been alleviated.

A specification complies with the 35 U.S.C. § 112, first paragraph, enablement requirement if it allows those of ordinary skill in the art to make and use the claimed invention without undue experimentation. *See In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993).

A simple Google search on the Internet demonstrates that the Mandrel test is a commonly known test in the industry for, "the test for determining the flexibility and adhesion of surface coatings by bending coated metal panels around mandrels." See e.g. definition of "Mandrel test" on "composite.about.com." The standard for enablement does not require Applicants to explicitly describe terms that are well known in the art, such as "Mandrel test." See e.g. MPEP Section 2164.04. Moreover, in order to make a rejection, the initial burden is on the Examiner to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). In this case, it is clear that Mandrel test is a term that persons skilled in the field of the claimed invention are well familiar. Further, the Examiner has failed to meet the initial burden of demonstrating a reasonable basis as to why persons skilled in the art have insufficient evidence to make and use the claimed invention, keeping in mind that experimentation is permitted under the enablement standard of Section 112, so long as it is not "undue." Applicant therefore respectfully requests that this ground of rejection be withdrawn.

¹ The Examiner's argument appears to be directed toward the 35 U.S.C. § 112, first paragraph, written description requirement rather than the enablement requirement.

III. CLAIM REJECTIONS - 35 U.S.C. § 112, Second Paragraph

Claims 1-5 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

First, the Examiner states that in claim 1, last two lines, "or preheating to within austenitic temperatures" is confusing as to what is required. Applicant has now amended claim 1 to specify that the coatings are applied on the cast iron and steel products without preheating prior to the plunging step. It is only during the plunging step that the temperature of the melt is in the range of 660-680°C. This specifying statement is therefore not inconsistent with the remainder of the claim. Applicant therefore respectfully requests that this ground of rejection be withdrawn.

Second, the Examiner again objects to the language pertaining to the Mandrel test. Again, the claims have been amended such that it is believed the reference to the Mandrel test is sufficiently clear, especially to persons skilled in the art that are already familiar with the Mandrel test. It is therefore not necessary for Applicants to set forth already-known parameters of the test within the claim itself as to do so would be redundant and not legally required by Section 112, second paragraph. Applicants therefore also request that this ground of rejection be withdrawn.

The Examiner next states that in claim 2, second to last line, "or introduction of copper to the melt" is confusing. Again, while Applicants believe the claim is sufficiently understandable, in the interest of expediting prosecution, the claim has been amended to specify that there is no presence of copper in the melt.

Finally, in claim 4, last three lines, the Examiner states that "or preheating the product prior to plunging in the melt" is confusing as to what is required. It is not understood what is confusing about this statement, and Applicants do not know how to make it any more clear than it already is. In this regard, it simply states that the product is not preheated prior to plunging in the melt. That is unambiguous, and would not allow for heating prior to the coating step. The language itself disallows the options raised by the Examiner in the rejection. Applicants therefore also respectfully request that this ground of rejection be withdrawn.

IV. CLAIM REJECTIONS - 35 U.S.C. § 103

A. Rallis in View of Japan '213 - Claims 1-2 and 4-5

Claims 1-2 and 4-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rallis in view of Japan '213.

A claimed invention is not patentable if the subject matter of the claimed invention would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

Again, the combination of Rallis and Japan '213 fail to teach or suggest the provisions of the claimed invention, as Rallis requires preheating prior to the plunging step to a temperature above 1341°F to within the austenitizing temperature range of the carbon or alloy steel. (Col. 2, lines 18-21). Such preheating is now disallowed by all of the claims. Japan '213 fails to provide this missing teaching as it does not disclose any process, but only an aluminum alloy.

It is the Examiner's position that, "it would have been obvious to perform the coating method of Rallis in view of '213 without preheating" on the basis that, "it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art," citing *In re Karlson*, 136 USPQ 184 in support. (Office Action, p. 15).

While there is some support in the case law for the principle that omission of an element and its function involves only routine skill in the art, the court has also recognized that this is not a mechanical rule, and that the language in *Karlson* was not intended to short circuit the determination of obviousness mandated by 35 U.S.C. § 103 (see *In re Wright*, 343 F.2d 761, 769-70, 145 USPQ 182, 190 (CCPA 1965)). Further, Applicants direct the Examiner's attention to *In re Ochiai*, 71 F.3d 1565, 1570, 37 USPQ2d 1127, 1132 (Fed. Cir. 1995) and *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996) wherein the Federal Circuit has held that the claimed invention as a whole must be evaluated under the standards set down in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 , 148 USPQ 459, 466 (1966) and its progeny, and that the use of *per se* rules is improper in applying the test for obviousness under 35 U.S.C. § 103 since such rules are inconsistent with the fact-specific analysis of claims and prior art mandated by section 103.

Here, the Examiner has failed to meet the initial burden of proof for obviousness by failing to provide a reasonable suggestion for eliminating the preheating step of Rallis. In fact, Rallis teaches away from such elimination by virtue of its disclosure that said heat treatment is necessary in order to increase the yield strength of the steel article to a minimum of 60,000 psi. (Abstract).

Thus, the Examiner has failed to provide a *prima facie* case of obviousness, and Applicants respectfully request that this ground of rejection be withdrawn.

B. Gierek in View of Rallis and Japan '213 - Claims 1-5

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gierek et al. in view of Rallis and Japan '213. Again, Gierek does not disclose alloying of an aluminum melt with zinc, silicon, magnesium and tin. Rather, Gierek discloses an aluminum alloy that can contain aluminum and a single alloying metal such as zinc, silicon, magnesium or tin. More particularly, Gierek is limited to a single alloying metal. There is no teaching or suggestion to modify the teachings of Gierek to alloy an aluminum melt with these four claimed metals.

Further, it is again noted that Rallis in view of Japan '213 do not teach the preparation of aluminum allow on cast iron and steel products without preheating prior the plunging step to a temperature within the austenitizing temperature range of the carbon or alloy steel. Gierek also teaches preheating within the austenitizing temperature range, with upper bounds 270°C higher than the upper temperature allowed by the present invention.

The Examiner argues that where claimed ranges overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists. Again, however, the law of obviousness does not support such an automatic rule, however. While optimization of a known result-effective variable in a given range is generally obvious, *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955), it is only when it is reasonably expected that an improvement will arise in that range. See e.g. *Ex parte Atkinson*, Appeal 2007-3900 (December 18, 2007). Here, it is not clear what result the Examiner thinks would be "optimized" by substantially lowering the temperatures described by Gierek to below austenitizing range to arrive at Applicant's claimed preheating temperature range.

It is therefore apparent that none of the cited references teach or recognize the claimed features of the present invention. It is not sufficient for the Examiner to merely cite references that could possibly be modified in a particular manner to arrive at a particular invention. Instead,

the Examiner must provide objective reasoning as to why one skilled in the art would have modified the cited art in the manner described by the claimed invention. In this case, the cited prior art either provides no reasoning to lower the temperature of the preheating step to below austenitizing temperature range, or the art explicitly teaches away from preheating below this temperature. In either case, the Examiner's initial burden for establishing a *prima facie* case of obviousness has not been met.

Without respect to the lack of copper in the claimed invention, the Examiner asserts that the statement in Japan '213 that a desirable aluminum alloy includes 0.5% copper is "a typographical error." (Office Action p. 18). The Examiner's reasoning is that p. 61, first column teaches 0-5% copper, which the Examiner argues means that no copper can be used in the alloy. Applicants would respectfully note that is more likely that 0-5% copper is more likely the typographical error, and is intended instead to read "0.5% copper." Thus, the Examiner's assertion that Japan '213 teaches an aluminum alloy without copper is in error.

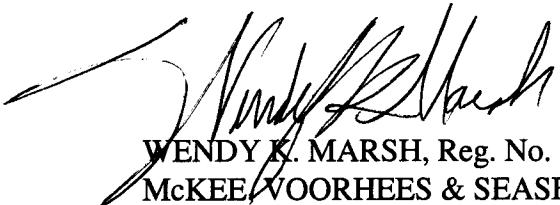
For all of these reasons, claims 1-5 are not obvious over Gierenk in view of Rallis and Japan '213. Applicant therefore respectfully requests that this ground of rejection be withdrawn.

V. CONCLUSION

This is a request under the provision of 37 CFR § 1.136(a) to extend the period for filing a response in the above-identified application for three additional months from January 22, 2008 to April 22, 2008. Applicant is a small entity; therefore, please charge Deposit Account number 26-0084 in the amount of \$525.00. Any deficiency or overpayment should be charged or credited to Deposit Account 26-0084. No other fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



WENDY K. MARSH, Reg. No. 39,705
McKEE, VOORHEES & SEASE, P.L.C.
801 Grand Avenue, Suite 3200
Des Moines, Iowa 50309-2721
Phone No: (515) 288-3667
Fax No: (515) 288-1338
CUSTOMER NO: 22885

Attorneys of Record

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